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IMRT/IGRT of 76Gy for intermediate and high risk prostate cancer combined with neoadjuvant and concurrent ADT

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Purpose/Objective: The purpose of this study is to evaluate the clinical efficacy of High precision IMRT combined with neoadjuvant & concurrent MAB for intermediate- & high-risk prostate cancer patients.
Materials and Methods: Between Sep 2000 and Dec 2007, 200 localized prostate carcinomas (T1-T3, N0M0) were treated with neoadjuvant (3-6 months) and concurrent (2months) hormonal therapy. Maximum androgen blockade (MAB) was used as hormonal therapy. There were 120 high-risk and 80 intermediate-risk group patients. Initial PSA level was ranging 4.0-142 ng/ml (median: 12.5ng/ml) and Gleason score was ranging 5-10 (median: 7). Median follow-up duration is 6.04Y (range: 0.7-11.6Y). IMRT was delivered with SMLC-IMRT technique using a 2Gy/fraction to a total dose of 76Gy. GTV was defined as prostate and CTV was defined as GTV+ seminal vesicles. PTV margin was 7mm around the CTV except for posterior direction. Posterior margin was 5-6mm. We used 3-gold markers implanted to the prostate for localization. After radiation therapy, no further hormonal therapy was used until PSA failure. The PSA failure definition was done according to Phoenix criteria. The follow-up interval was every 3months. We evaluate the PSA failure free survival rate (PFFS), Overall survival rate (OS) and acute and late sequelae by CTCAE (version4.0).
Results: The PFFS at 5-/ 7-years of intermediate- and high-risk group were 96.1%/96.1%, 85.2%/80.5%, respectively. The OS at 5-/7-years of each group were 98.7%/97.4%, 95.8%/95.8%, respectively. Although the PFFS for high risk group was good, the PFFS for special group (>=T3&PSA>=20&GS>=8) was only 65%. The cause of death was another cancer (lung, esophagus, stomach). Acute Grade 1/2 genitourinally and gastrointesitinal sequelae was observed in 66.0%/6.0%, 2.5%/1.0%, respectively. No grade 3 acute sequelae was observed. Late Grade 1 urogenital and gastrointestinal sequelae were observed in 24.1%, 9.1%, respectively. Grade3 urethral stricture was observed in 2 patients. All of them recovered after bougie. No grade 2 or higher rectal complication was observed.
Conclusions: According to our results, short course (3-6months) neoadjuvant and concurrent (2 months) MAB with 76Gy irradiation with IMRT/IGRT technique would be effective for intermediate& high risk prostate cancer patients at 7 years. For the special group (>=T3&PSA>=20&GS>=8), another treatment option might be necessary.

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Simultaneous integrated boost IMRT in carcinoma prostate: A tertiary cancer center experience.

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Purpose/Objective: Feasibility and dosimetric comparison of the sequential and simultaneous integrated boost IMRT delivery techniques on target coverage and normal-tissue sparing. A sequential two-phase process,initial and boost irradiation, is the common practice for the radiotherapy management of high-risk prostate cancer. In this work, we explore the feasibility of using intensity modulated radiation therapy (IMRT) simultaneous integrated boost (SIB), a single-phase process, to simultaneously deliver high dose to the prostate and lower dose to the pelvic nodes, in our setup.
Materials and Methods: The study included 25 patients of intermediate-high risk carcinoma prostate. Patients were immobilized with thermoplastic cast in supine position. Target volumes i.e. PTV P+SV (Prostate and Seminal vesicles), PTV LN and organs at risk were delineated as per the RTOG census guidelines. On Eclipse version 6.5, two plans were generated i.e. sequential 3DCRT (4 field box technique) followed by seven field IMRT boost & seven field SIB-IMRT. Prescribed dose to PTV P+SV was 74 Gy/37#/7.2 wks for sequential plan & 74 Gy/27#/5.2 wks for SIB IMRT. Dose to PTV-LN was 50 Gy/25#/5wks for SEQ IMRT and 54Gy/27#/5.5wks for SIB-IMRT plan. Plan comparison was done using dose volume histogram (DVH) in terms of target coverage index (CI=target volume covered by prescription dose/target volume) and heterogeneity index (HI=D5/D95). For OAR maximum and mean doses and volume of OAR receiving different doses.
Results: Results of SEQ-IMRT and SIB-IMRT are summarized in table1. SIB-IMRT delivered a higher EQD2 (87 vs 74Gy) to PTV P+SV. Target coverage was better with SIB-IMRT both in terms of conformity & homogeneity indices. SIB IMRT reduced dose to critical organs at risk in terms of mean and max dose. Analysis of DVH parameters (Rectum V75, V65, V50, Bladder V75, V65 and Bowel V45) revealed better sparing of OARs with SIB-IMRT.

	SIB-IMRT	SEQ-IMRT
PTV P+SV Max.(cGy)	8139.40±60.00	8204.25±122.65
PTV P+SV Mean (cGy)	7771.42±17.88	7609.95±78.35
PTV P+SV CI	0.9843±0.0127	0.9085±0.05
PTV P+SV HI	1.0555±0.0008	1.0743±0.0011
PTV LN Max. (cGy)	7921.87±30.3	7425.37±60.93
PTV LN Mean(cGy)	5864.47±71.4	5901.97±38.53
PTV LN CI	0.98261±0.0172	0.99195±0.0061
PTV LN HI	1.4432±0.0272	1.1261±0.204
BLADDER Max. (cGy)	7721.97±93.5	7903.87±40.63
BLADDER Mean(cGy)	5368.5±299.6	6409.7±551.5
RECTUM Max. (cGy)	7640.7±95.7	7804.15±59.05
RECTUM Mean(cGy)	5599.25±204.55	6473.00±59.05
BOWEL Max. (cGy)	5951.45±369.45	5699.47±183.13
BOWEL Mean(cGy)	2421.45±215.65	2827.42±133.78
Bladder V75	5.15±5.27	23.99±18.69
Bladder V65	28.50±6.32	60.31±16.25
Rectum V75	5.39±13.36	17.47±3.85
Rectum V65	31.39±13.05	53.85±30.6
Rectum V50	65.01±14.36	89.36±3.3
Bowel V45	13.86±4.68	24.4±11.54

Conclusions: Delivery of SIB IMRT was safe and feasible with regard to target coverage. SIB-IMRT was superior to sequential IMRT in delivering reduced doses to adjoining organs at risk. A further study in large volume exploring the role of SIB IMRT with its potential dosimetric and radiobiological advantages in carcinoma prostate is warranted in our setup.

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Cultural adaptation of the memorial anxiety scale for prostate cancer patients: preliminary results

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Purpose/Objective: The diagnosis of prostate cancer (PCa) may cause psychological distress. The Memorial Anxiety Scale for Prostate Cancer (MAX-PC) (Roth A., 2006) is a self-report questionnaire that was developed to assess PCa-related anxiety. MAX-PC has proven to be a valid and reliable tool which can be translated and adapted for use in non-English speaking populations. The aim of this study was to present the procedures for cultural adaptation for the Italian population together with the preliminary results for psychometric properties.
Materials and Methods: The study sample was composed of patients (pts) diagnosed with PCa who either were on Active Surveillance (AS) or underwent radical radiotherapy (RT). Pts filled out MAX-PC before undergoing RT or entering the AS protocol. The questionnaire consists of 18 items divided into 3 subscales measuring general PCa anxiety, anxiety related to prostate specific antigen (PSA) levels, and fear of recurrence. The original English version was translated in Italian by two independent researchers; the back translation into English was performed by two native English-speaking translators. Back translations were discussed and re-translated into Italian to obtain a final version. Psychometric analyses were performed to obtain reliability indexes. Specifically, a) descriptive analyses to detect floor/ceiling effect, b) Cronbach's alpha coefficients (α) to estimate the internal consistency of the total MAX-PC and the three subscales, c) item to total correlation analyses to assess subscales internal consistency.
Results: One hundred and thirty pts (118 AS – low risk, localized PCa; 12 RT – low to intermediate risk) filled in MAX-PC. Table 1 reports